

1

ABSTRACT

An electrochemical cell including a cathode, an electrolyte in ionic contact with the cathode, and
an anode in physical contact with the electrolyte, wherein the anode contains a controlled release
6 anode composition that includes at least a first anode active material and at least a first controlled
release agent in physical contact thereto for tentatively isolating the first anode active material
from the electrolyte in the beginning of a cell operation for a delayed reaction of the first anode
active material. Preferably, the anode further contains an initial-stage anode active material in
direct contact with the electrolyte. Such a controlled release anode can be used in a variety of
11 electrochemical cells including metal-air batteries, such as a zinc-air battery, for an extended
period of operating time.